



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/841,061	04/24/2001	Ilya Emil Berchenko	5659-06300/EBM	4091

7590 12/02/2002

DEL CHRISTENSEN  
SHELL OIL COMPANY  
P.O. BOX 2463  
HOUSTON, TX 77252-2463

EXAMINER

KRECK, JOHN J

ART UNIT

PAPER NUMBER

3673

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/841,061

Applicant(s)

BERCHENKO ET AL.

Examiner

John Kreck

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 26 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2424-2426, 2430-2449, 2457, 2458, 2460, 2461 and 5150-5205 is/are pending in the application.
- 4a) Of the above claim(s) 5161-5163, 5184-5190 and 5193 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 18.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Continuation of Disposition of Claims: Claims rejected are 2424-2426, 2430-2449, 2457, 2458, 2460, 2461, 5150-5160, 5164-5183, 5191, 5192 and 5194-5205.

### DETAILED ACTION

The amendment dated 8/26/02 has been entered in part: claims 2427-2429 were cancelled in the amendment filed 4/1/02; thus they cannot be amended.

Claims 2424-2426, 2430-2449, 2457, 2458, 2460, 2461, and 5150-5205 are pending in this application.

Claims 5161-5163, 5184-5190, and 5193 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 13.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. Claims 2424-2426, 2430-2449, 2457, 2458, 2460, 2461, 5150-5160, 5164-5183, 5191, 5192, and 5194-5205 are provisionally rejected under the judicially created

Art Unit: 3673

doctrine of obviousness-type double patenting as being unpatentable over copending applications (including the present application): 09/840,936; 09/840,937; 09/841,000; 09/841,060; 09/841,061; 09/841,127; 09/841,128; 09/841,129; 09/841,130; 09/841,131; 09/841,170; 09/841,193; 09/841,194; 09/841,195; 09/841,238; 09/841,239; 09/841,240; 09/841,283; 09/841,284; 09/841,285; 09/841,286; 09/841,287; 09/841,288; 09/841,289; 09/841,290; 09/841,291; 09/841,292; 09/841,293; 09/841,294; 09/841,295; 09/841,296; 09/841,297; 09/841,298; 09/841,299; 09/841,300; 09/841,301; 09/841,302; 09/841,303; 09/841,304; 09/841,305; 09/841,306; 09/841,307; 09/841,308; 09/841,309; 09/841,310; 09/841,311; 09/841,312; 09/841,429; 09/841,430; 09/841,431; 09/841,432; 09/841,433; 09/841,434; 09/841,435; 09/841,436; 09/841,437; 09/841,438; 09/841,439; 09/841,440; 09/841,441; 09/841,442; 09/841,443; 09/841,444; 09/841,445; 09/841,446; 09/841,447; 09/841,448; 09/841,449; 09/841,488; 09/841,489; 09/841,490; 09/841,491; 09/841,492; 09/841,493; 09/841,494; 09/841,495; 09/841,496; 09/841,497; 09/841,498; 09/841,499; 09/841,500; 09/841,501; 09/841,502; 09/841,632; 09/841,633; 09/841,634; 09/841,635; 09/841,636; 09/841,637; 09/841,638; and 09/841,639.

Although the conflicting claims are not identical, they are not patentably distinct from other. For example; claim 528 (cancelled in this application, but still present in other applications) is an obvious variation of claim 2425. Note that claim 528 (as it depends from 491) only calls for "one or more" heat sources; rather than "at least two"; however this is deemed to be essentially the same because claim 491 also calls for superposition of heat: superposition inherently requires two sources. Claim 491 also includes the additional limitation of "layer" of the coal formation; however, it is well known that coal deposits occur in layers, thus this is not deemed to be a patentable distinction. Furthermore; although claim 2425 in the present application calls for the mixture to be produced as a vapor (which is not claimed in claim 528); this is well known and old in the art of coal gasification and pyrolysis; thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified claim 528 to have included a vapor as called for in claim 2425. It is also noted that at least one other application includes a set of claims which are substantially identical to the claims in this application; but which call for hydrocarbon containing formation rather than coal. Since

Art Unit: 3673

applicant has defined hydrocarbon containing formation as including coal; this would be an obvious variation.

37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. The discussion below sets forth the Office's basis for its determination that each of these ninety one applications contains at least one claim that conflicts with another one of the related co-pending applications identified above. Each of these ninety one applications includes the same specification and collectively these ninety one applications present over five thousand claims. The Office has shown that each of these ninety one applications contains at least one claim that conflicts with another one of the related co-pending applications identified above, and an analysis of each of five thousand claims in the ninety one related co-pending applications would be an extreme burden on the Office requiring tens of thousands of claim comparisons. Therefore, the Office is requiring applicant to resolve the conflict between these applications and comply with 37 CFR 1.78(b) by either:

- (1) filing a terminal disclaimer in each of the related ninety-one applications terminally disclaiming each of the other ninety applications; or,

Art Unit: 3673

(2) provide a statement that all claims in the ninety applications have been reviewed by applicant and that no conflicting claims exist between the applications. Such a statement must set forth factual information to identify how all the claims in the instant application are distinct and separate inventions from all the claims in the above identified ninety applications.

See MPEP 804.02 IV for a discussion of multiple double patenting rejections and the requirements for a single terminal disclaimer.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2424-2426, 2433-47, 2457, 2458, 2460, 5150-5153, 5154-5163, 5167-5181, 5184-5194, 5196-5200, 5102, 5204, and 5205 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai, et al. (U.S. Patent number 4,299,285) in view of Van Meurs, et al. (U.S. Patent number 4,886,118).

The Tsai reference teaches a method for treating a coal formation in situ comprising providing heat from one or more heaters to at least a portion of the

Art Unit: 3673

formation; allowing the heat to transfer from the one or more heaters to a selected section of the formation; and producing a mixture from the formation through one or more production wells, wherein the heating is controlled such that the mixture is produced as a vapor. The Tsai reference fails to teach the at least about 7 heaters for each production well. Note that Tsai teaches: "*the principles are applicable to a multiple of interrelated injection and production wells*" (col. 2, line 8).

The Van Meurs reference teaches a similar in situ heating system, and further teaches that six or twelve heat sources for each production well significantly increases the production (col. 8, line 24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the Tsai method to have included at least about 7 heaters disposed in the formation for each production well, as called for in claims 2424, 5154, and 5196, in order to improve production.

With regards to claim 2425, 5159; the Tsai and Van Meurs references fail to explicitly teach the superposition of heat sources. It is apparent that one of ordinary skill in the art would know that the heat sources should be spaced to substantially heat the entire formation. Any configuration of heat sources that provides heat to the entire formation would inherently cause superposition of heat; thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the Tsai method to have included superposition of heat as called for in claim 2425 and 5159; in order to ensure that the entire formation is heated.



With regards to claim 2426, 5160; the Tsai reference teaches temperature within the range of 270–400°C (300 or 350° are disclosed in col. 3, lines 42–45).

With regards to claim 2433, 5167, 5205; Tsai fails to teach a heating rate, but Van Meurs teaches the heating rate less than 10°C/day. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the Tsai method to have a heating rate less than 10°C/day as called for in claims 2433, 5167, 5205; in order to efficiently heat the formation. The Pwr equation is a well known heat transfer law, and thus is inherent.

With regards to claim 2434 and 5168; the Tsai reference does not explicitly teach the transferring by conduction; however this is inherent in a solid substance such as coal. Even though the bulk of the heating in the Tsai method may be done by convection; it is apparent that some unfractured coal must remain, and thus the allowing heat to transfer comprises transferring heat substantially by conduction (that is, substantially within the unfractured portions).

With regards to claim 2435 and 5169; the Tsai reference does not teach the thermal conductivity; however, it would have been further obvious to one of ordinary skill in the art at the time of the invention to have practiced the Tsai method in a coal seam having a thermal conductivity of greater than about 0.5W/(m°C) as called for in claim 2435 and 5169; such a formation would be a desirable choice because it would heat more uniformly.

With regards to claims 3436–3447, and 5171–5180; the nature of hydrocarbons produced from such heating is highly variable, and dependent upon many factors, not

Art Unit: 3673

least of which is the characteristics of the coal. The components of the produced mixture are deemed to be the results of design variables, including coal characteristics and temperature.

With regards to claims 2457, 2458, 5191, 5192, and 5204; the Tsai reference teaches the permeability greater than about 100 md in table 1. The uniform increase in permeability is inherent.

With regards to claim 2460, 5194; the Van Meurs reference teaches the heat sources surrounding the production well; since this includes at least 3 sources this inherently includes a triangle. It would have been further obvious to one of ordinary skill in the art at the time of the invention to have further modified the Tsai method to have included at least 3 sources in a triangle as called for in claim 2460, in order to increase production.

With regards to claim 5150, 5155, 5197; the "selected section" is inherent.

With regards to claims 5151, 5152, 5156, 5157, 5198, and 5199; the "pyrolysis zone" is inherent.

With regards to claim 5153, 5158, and 5200; the open wellbore is inherent in the Tsai method (if the well was not open, the air would not flow into the coal as disclosed).

3. Claim 2431, 5165, and 5203 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai and Van Meurs as applied to claims 2424, 5154, and 5196 above, and further in view of Elkins (U.S. Patent number 2,734,579).

Art Unit: 3673

The Tsai and Van Meurs references fail to teach the controlling the temperature and pressure wherein the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature.

Elkins teaches controlling the pressure in order to lower the temperature (col. 3, line 46); this is done in order to help prevent overheating. It would have been obvious to one of ordinary skill in the art at the time of the invention to have further modified the Tsai process to have included the temperature is controlled as a function of the pressure or the pressure is controlled as a function of the temperature as called for in claims 2431, 5165, and 5203, and as taught by Elkins, in order to prevent overheating.

4. Claim 2461 and 5195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai, et al. and Van Meurs, et al. as applied to claims 2424 and 5154 above, and further in view of Salomonsson (U.S. Patent number 2,914,309).

The Van Meurs and Tsai references fail to explicitly teach the unit of heat sources in a triangular pattern and the plurality of units in a repetitive pattern. It is noted that the Van Meurs reference teaches the heat sources surrounding the production well, which would inherently include a triangular pattern.

Salomonsson teaches that it is desirable to have a repetitive pattern in order to cover the area evenly. It is apparent that this is beneficial in order to prevent hot spots.

It would have been further obvious to one of ordinary skill in the art at the time of the invention to have further modified the Tsai method to have included a unit of a

Art Unit: 3673

triangular pattern and a repetitive pattern of units as called for in claims 2461 and 5195; in order to cover the area evenly.

5. Claims 2448, 2449, 5182, and 5183 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai, et al. and Van Meurs, et al. as applied to claim 2424 and 5154 above, and further in view of Stoddard, et al. (U.S. Patent number 4,463,807).

The Tsai and Van Meurs references fail to explicitly teach the ammonia.

It is well known that ammonia is a byproduct of such heating of coal. This is taught by Stoddard. It is readily apparent that the amount of ammonia is dependent on many design factors, including the formation characteristics (hydrocarbon content, etc.). It would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the Tsai method, as modified, in a formation with characteristics allowing greater than 0.05% of the produced mixture to be ammonia, as called for in claim 2448 and 5182.

With regards to claim 2449 and 5183; it is well known that one of the chief uses for ammonia is fertilizer; thus it would have been further obvious to one of ordinary skill in the art at the time of the invention to have used ammonia produced from the coal seam for fertilizer as called for in claim 2449 and 5183.

### ***Response to Arguments***

6. Applicant's arguments filed 8/26/02 have been fully considered but they are not persuasive.

Art Unit: 3673

7. With regards to independent claim 2424; applicant has argued that the Tsai reference fails to teach or suggest “providing heat from one or more heaters to at least a portion of the formation”. Applicant also provides text from the specification to support a definition of “heater”, which would exclude the fire taught by Tsai.

It is noted that applicant’s specification also includes much broader definitions of “heater”, which include fire:

*“Combustion of a fuel may be used to heat a formation. Combusting a fuel to heat a formation may be more economical than using electricity to heat a formation. Several different types of heaters may use fuel combustion as a heat source that heats a formation. The combustion may take place in the formation, in a well and/or near the surface. Combustion in the formation may be a fireflood.”*

(col. 4, lines 9-13)

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

9. With regards to claim 2425; applicant has argued that superposition is not taught or suggested by Tsai or Van Meurs. Although Van Meurs fails to use the term superposition, it is apparent that the transfer of heat shown by figure 7 is a result of superposition.

10 With regards to claim 2434; it is noted that the claim broadly calls for “comprises transferring heat substantially by conduction” (emphasis added). It should be abundantly clear that heat transfer in a solid substance such as coal inherently includes conduction.

Art Unit: 3673

11 With regards to claims 2436-2447, 2460, and 2461; applicant's statements that "The features of claim ###, in combination with the features of independent claim 2424, do not appear to be taught or suggested by the cited art." are not at all persuasive.

12 With regards to claims 2457 and 2458; applicant has failed to provide any evidence that the uniform increase of permeability is not inherent.

13 With regards to claim 2431; Elkins explicitly teaches "decreasing the injection gas pressure also decreases the combustion zone temperature" (col. 3, line 46). Applicant's own specification discloses:

*"In an alternative embodiment, a fluid (e.g., liquid or gas) may be injected in the innermost row of wells, allowing a selected pressure to be maintained in or about the pyrolysis zone."*(emphasis added)

Applicant's arguments that the controlling of injection pressure taught by Elkins does not meet the claimed limitation are therefore not persuasive.

### ***Allowable Subject Matter***

Claims 2430, 2432, 5164, 5166, and 5201 are objected to as being dependent upon a rejected base claim, but would be allowable over the prior art if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant is reminded that double patenting rejections may be applicable to these claims.

Art Unit: 3673

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Kreck whose telephone number is (703)308-2725. The examiner can normally be reached on M-F 6:00 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Heather Shackelford can be reached on (703)308-2978. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3597 for regular communications and (703)305-7687 for After Final communications.

Art Unit: 3673

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)306-4177.

JJK  
November 27, 2002

  
DAVID BAGNELL  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600